

We Claim:

1. An actuating device, comprising:
  - an electromotive rotary drive for driving an
  - 5 actuating element about an axis of rotation between a
  - first and a second end position,
  - a spring for acting upon said actuating element in
  - said first end position, wherein said electromotive
  - actuating drive is a reversing drive and said spring
  - 10 action upon said actuating element is effective between
  - said first end position and an intermediate position
  - and is further ineffective between said intermediate
  - position and said second end position, the intermediate
  - position lying between said first and second end
  - 15 position.
2. The actuating device according to claim 1, wherein
- said electromotive actuating drive is a direct-current
- drive.
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3. The actuating device according to claim 1, further
- comprising a rotatable shaft arranged within said
- actuating element, said shaft being driven by said
- actuating drive.
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4. The actuating device according to claim 3, further
- comprising a gearwheel affixed to said shaft and a
- drive pinion affixed to said actuating drive and
- functionally associated with said wheel so as to
- 30 rotatably drive said wheel.
5. The actuating device according to claim 3, further
- comprising a toothed quadrant affixed to said shaft and
- a drive pinion affixed to said actuating drive and

functionally associated with said wheel so as to rotatably drive said wheel.

5 6. The actuating device according to claim 3, further comprising:

- a gearwheel affixed to said shaft, and
- a drive pinion affixed to said rotary drive, said pinion being functionally associated with said gearwheel so as to drive said gearwheel.

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7. The actuating device according to 6 further comprising at least one intermediate wheel functionally positioned between said drive pinion and said gearwheel, such that said pinion directly drives said at least one intermediate wheel which in turn directly drives said gearwheel.

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8. The actuating device according to claim 3, further comprising:

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- a toothed quadrant affixed to said shaft, and
  - a drive pinion affixed to said rotary drive, said pinion driving functionally associated with said toothed quadrant so as to drive said toothed quadrant.

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9. The actuating device according to 8 further comprising at least one intermediate wheel functionally positioned between said drive pinion and said toothed quadrant, such that said pinion directly drives said at least one intermediate wheel which in turn directly drives said toothed quadrant.

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10. The actuating device according to claim 4, further comprising a first and a second limit stop, said first

and second limit stop positioned on said device so as to limit rotational movement of said gearwheel.

5 11. The actuating device according to claim 5, further comprising a first and a second limit stop, said first and second limit stop positioned on said device so as to limit rotational movement of said toothed quadrant.

10 12. The actuating device according to claim 1, further comprising a first and a second limit stop, said first and second limit stop positioned on said device so as to limit rotational movement of said actuating element.

15 13. The actuating device according to claim 1, further comprising a first and a second limit stop, said first and second limit stop positioned on said device so as to limit rotational movement of a component functionally associated with said first and second limit stop.

20 14. The actuating device according to claim 11, wherein said toothed quadrant further comprises a first and a second end positioned proximate to said first and second limit stop respectively, such that when said  
25 toothed quadrant is rotated in a direction of one of said first and second limit stops, a respective one of said first and second ends abuts a respective stop thereby halting rotational motion of said toothed quadrant.

30 15. The actuating device according to claim 1, further comprising:

35 - a stop element rotatably mounted with one of a gearwheel and a toothed quadrant about said axis of rotation;

- a spring functionally associated with said stop element so as to impart rotational energy on said stop element in a direction of said second end position and against rotational energy imparted by at least one of said gearwheel and toothed quadrant on said stop element; and
- an intermediate limit stop positioned between said first and second end positions, said intermediate limit stop limiting rotation of said stop element.

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16. The actuating device according to claim 15, wherein said stop element is a stop disk.

17. The actuating device according to claim 15, wherein said intermediate limit stop limits angular rotation of said stop element in a direction of said second end.

18. The actuating device as claimed in claim 15, wherein said stop element further comprises a driver which can be acted upon in a direction of said first end position by one of said gearwheel or toothed quadrant.

19. The actuating device according to claim 15, wherein said stop element comprises an intermediate position stop for abutting said intermediate limit stop when said stop element is in an intermediate position.

20. The actuating device according to claim 15, wherein said stop element is mounted on a shaft at least partially housed within said actuating element.

21. The actuating device according to claim 15, wherein said spring is a spiral spring, having one end

affixed to said device and another end affixed to said stop element.

22. The actuating device according to claim 21,  
5 wherein said stop element further comprises a spring driver for engaging said spring.

23. The actuating device according to claim 21,  
10 wherein said spring surrounds a shaft at least partially housed in said actuating device.

24. The actuating device according to claim 15,  
further comprising:

- 15 - an actuating-device housing comprising a bowl-like recess,
- at least one of a gearwheel and a toothed quadrant,
- a shaft having one end extending into said housing and a second end extending from said housing, said  
20 shaft being approximately perpendicular with said housing, and
- wherein said shaft, said stop element, and said at least one of a gearwheel and a toothed quadrant are sandwiched within said recess.

25 25. The actuating device as claimed in claim 24,  
wherein said housing further comprises a motor chamber for accommodating said electromotive rotary drive.

30 26. The actuating device according to claim 24,  
further comprising a first and a second limit stop wherein said first and second limit stop and said intermediate stop are arranged on said housing.

27. The actuating device according to claim 1, wherein said actuating element is a rotary slide of a rotary slide valve, said valve comprising a valve passage closable by said rotary slide, said rotary slide being  
5 rotatably driven counter to a force direction of said spring from a valve closing position to a valve partially open position, and being further rotatably driven out of said partially open position to a fully open position.

10 28. The actuating device according to 27, wherein said partially open position is an intermediate position.

29. The actuating device according to claim 27,  
15 wherein said valve comprises a plurality of passages and said rotary slide further comprises means for closing off at least one of said plurality of passages.

30. The actuating device according to claim 29,  
20 further comprising a chamber for housing said rotary slide rotatably mounted therein, said chamber being located in said housing and comprising at least one flow inlet and flow outlet, said at least one flow inlet and flow outlet selectively overlapped with one  
25 or more flow passages of said rotary slide.

31. The actuating device according to claim 30,  
wherein said at least one flow inlet and flow outlet run into said rotary-slide chamber approximately  
30 radially and/or approximately axially.

32. The actuating device according to claim 27,  
wherein said rotary-slide valve is a regulating valve in a coolant circuit of an internal combustion engine,  
35 and said coolant circuit carrying cooling medium.

33. The actuating device according to claim 32, wherein said cooling medium is cooling liquid.

- 5 34. The actuating device according to claim 15, wherein said toothed quadrant is rotatable when said stop disk is stationary or rotating.